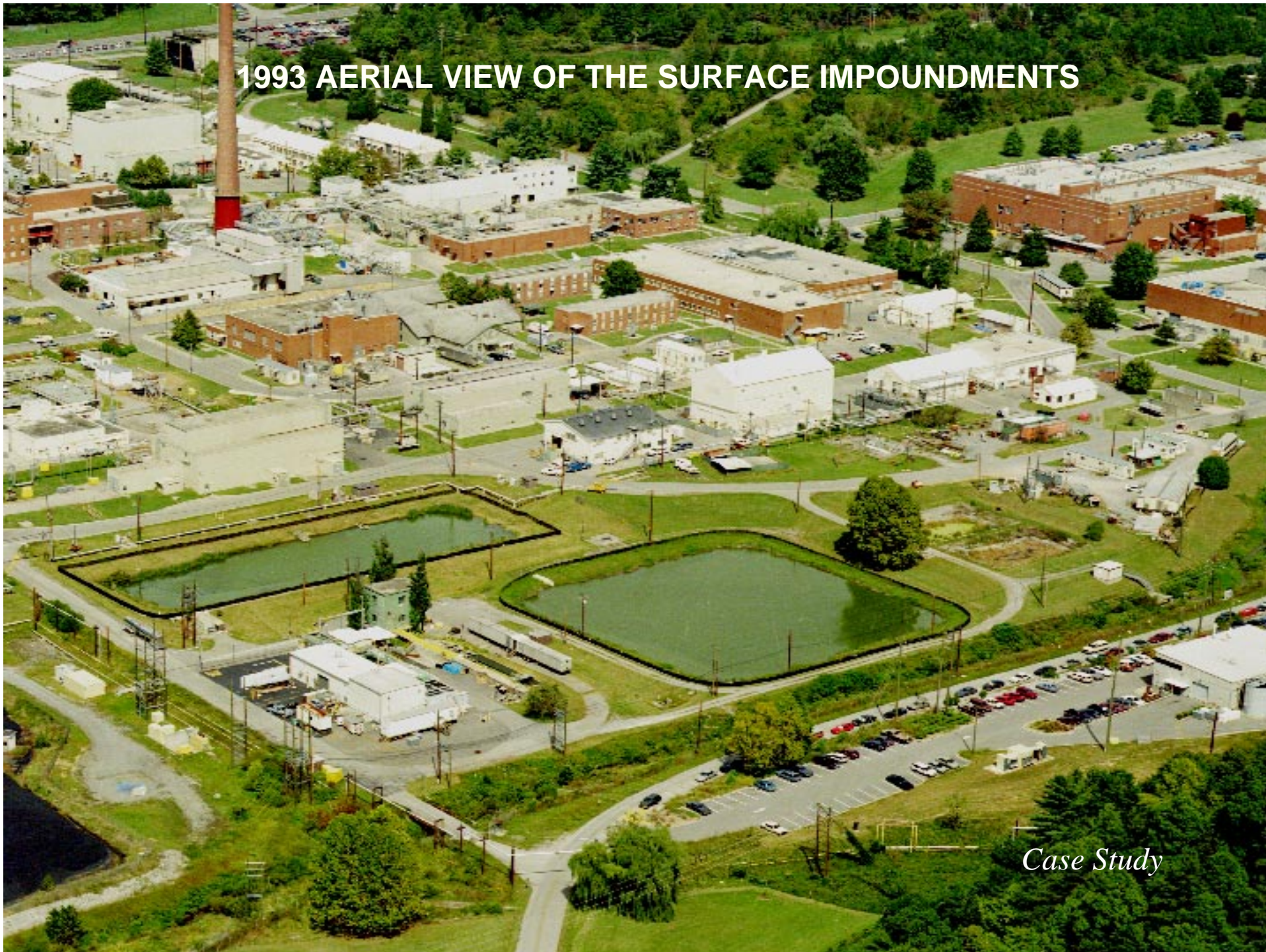


XIV. Case Study

Case Study Ground Rules

- Format
- Roles
- Negotiate/avoid dispute

1993 AERIAL VIEW OF THE SURFACE IMPOUNDMENTS



Case Study

Site Description

- Fractured limestone
- NHPA historical district
- Lower impoundment borders White Oak Creek
- No wetlands, floodplains or T&E species
- Never RCRA-permitted

Site Description (cont'd)

- Impoundments 3524 & 3513 are unlined
- Groundwater table
 - ➡ 3524 - intrudes only during wet season
 - ➡ 3513 - average depth - three feet above sediment level

Site Conditions

- Water maintained to limit the airborne release of sediment and for radioactive shielding purposes
- Primary risk driver is Sr^{90} releasing to groundwater

Remedial Actions

Waste Characteristics

- PCBs > 50 ppm
- RCRA characteristic waste
- Low-level radioactive waste

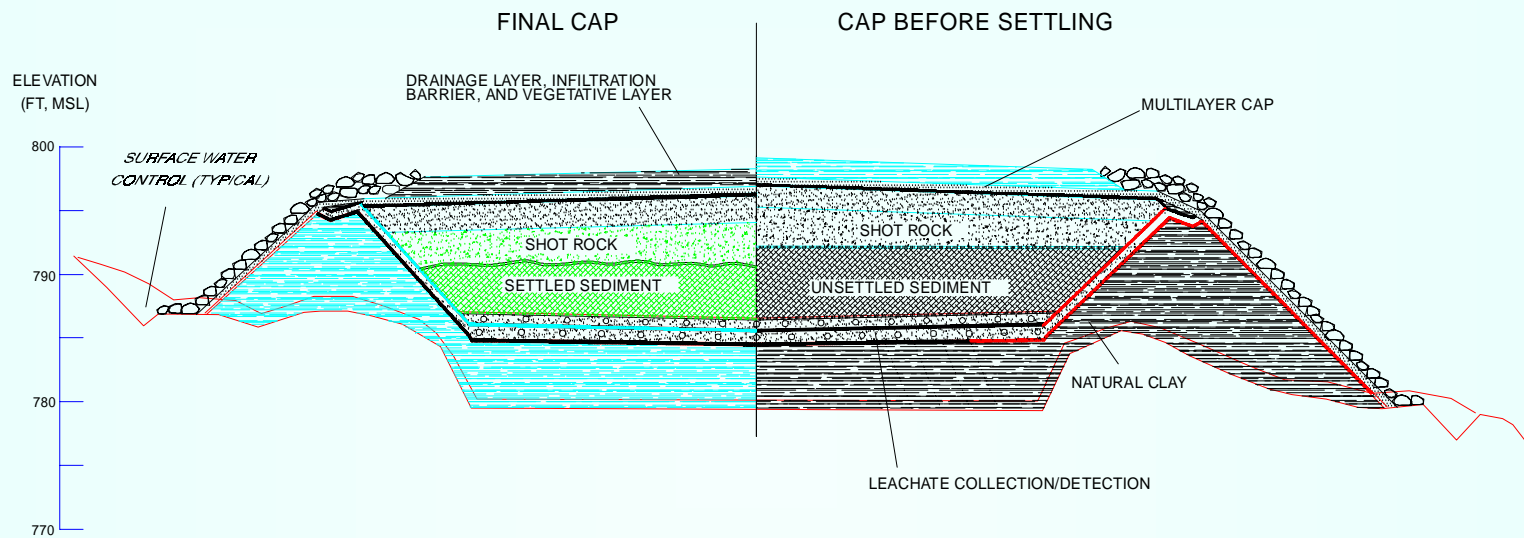
Case Study

Description of Case Study FS Alternatives

Scope: Removal of sediments and soil

Alternative 1: No Action

Alternative 2: Multilayer Cap



PROCESS WASTE POND 3524 - CONSOLIDATION CELL

NOTE: PRELIMINARY CAP CROSS SECTION SHOWN IS USED FOR FEASIBILITY-LEVEL COST ESTIMATING. MODIFICATIONS TO THE DESIGN TO IMPROVE CONSTRUCTABILITY OR EFFECTIVENESS OR REDUCE COSTS ARE EXPECTED DURING REMEDIAL DESIGN.

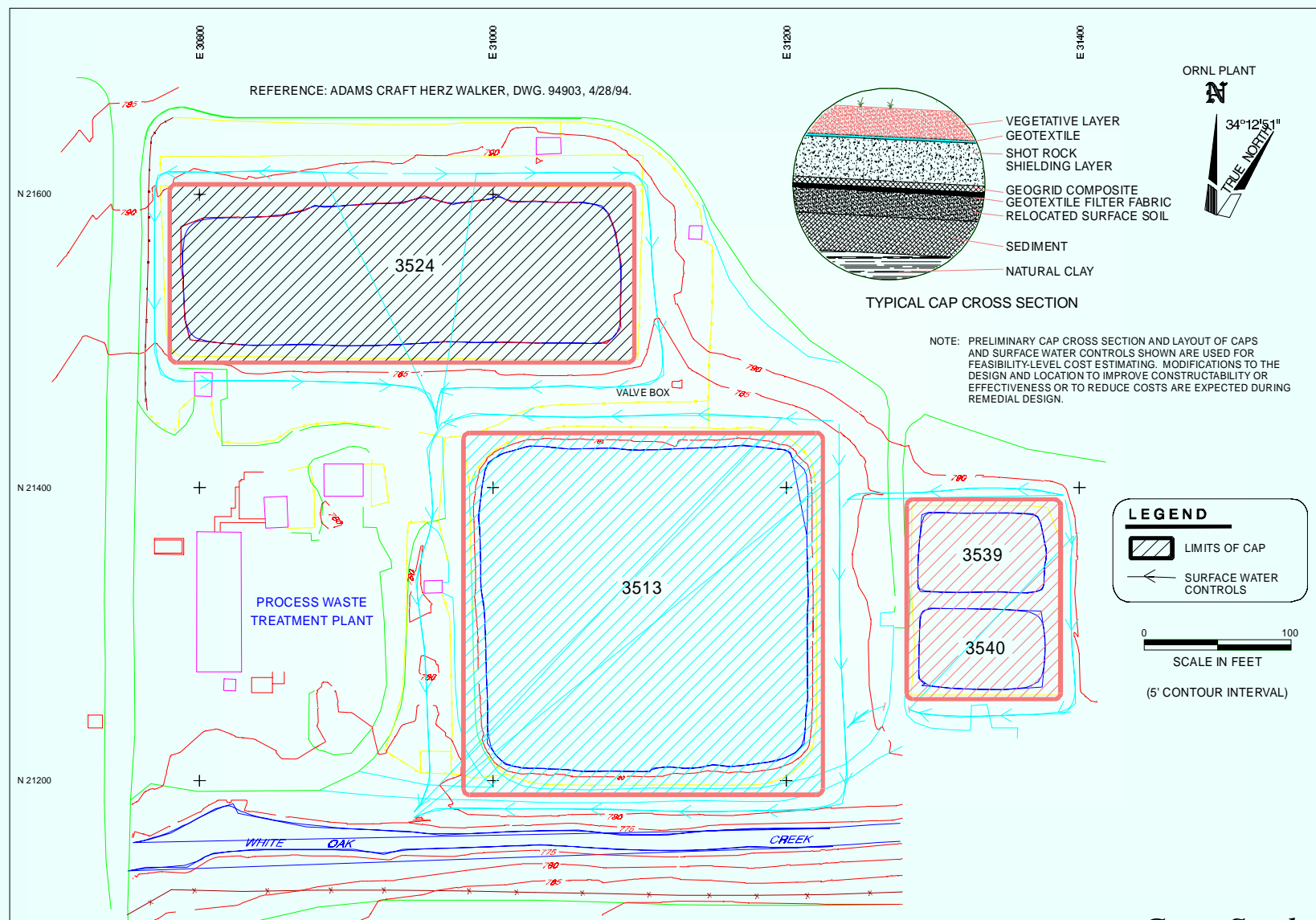
0 30
HORIZONTAL SCALE IN FEET
VERTICAL EXAGGERATION: 2X

Case Study

Description of Case Study FS Alternatives (continued)

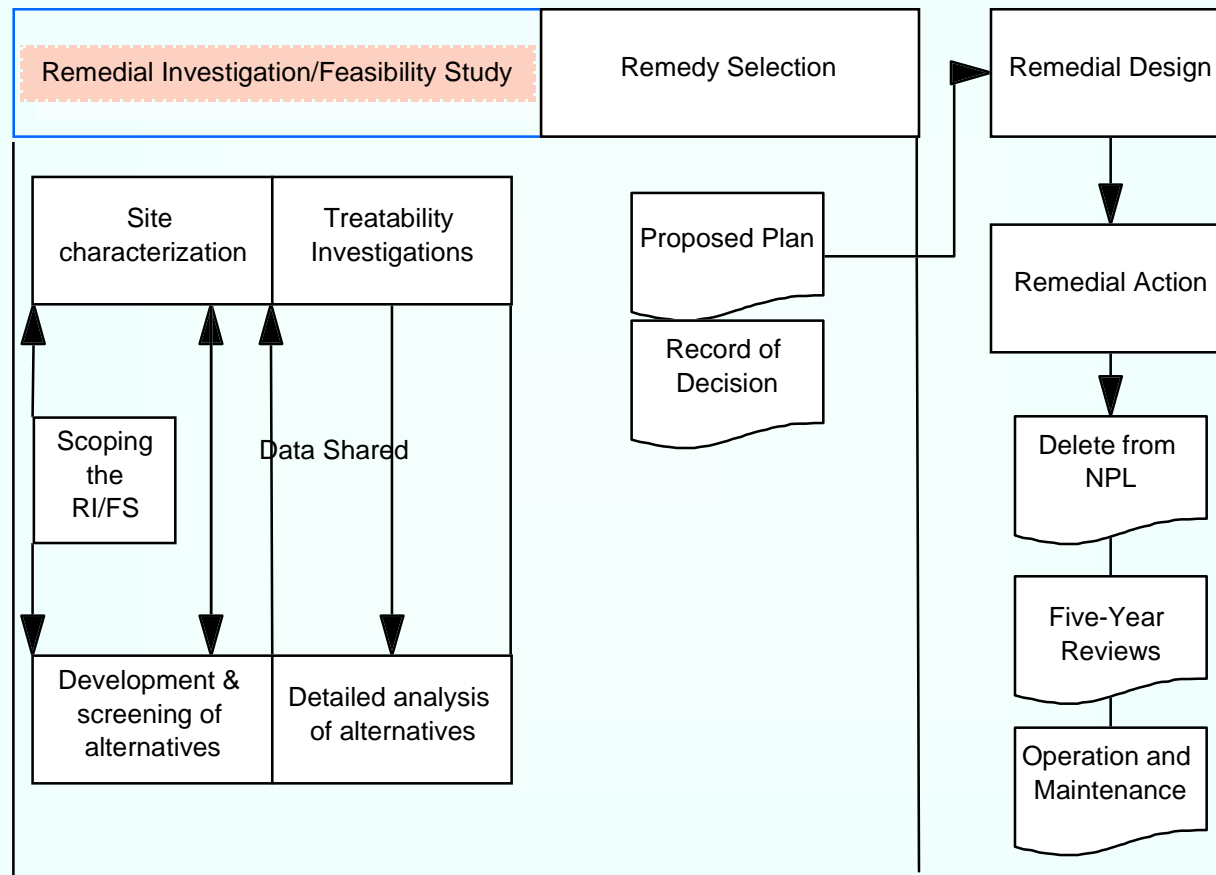
Alternative 3: Consolidation with Simple
Dewatering

Alternative 4: Off-AOC Consolidation Cell
(Consolidation cell located in another
section of the plant and out of the water
table)

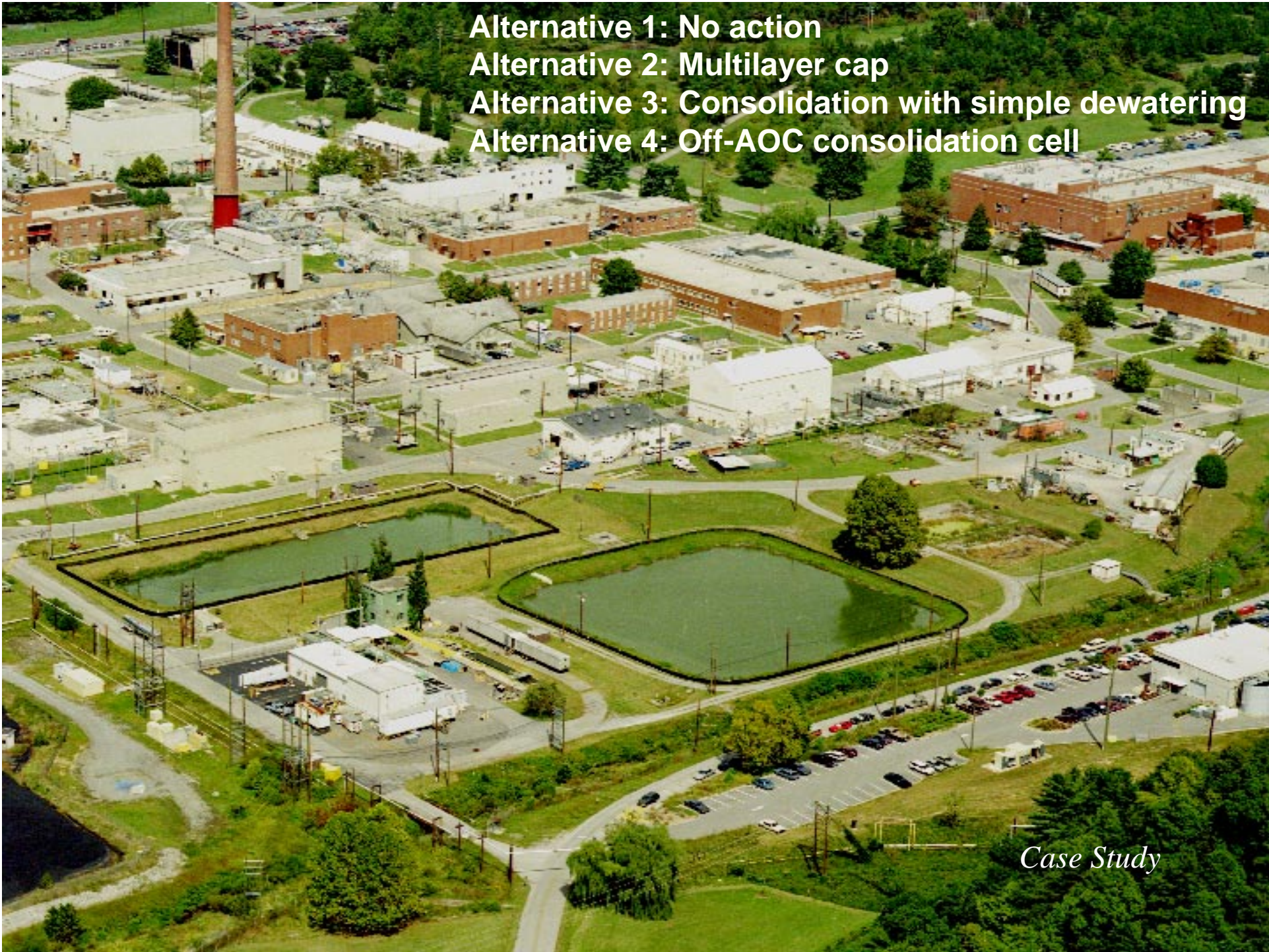


Case Study

Assumed Stage in the Remedial Action Process for the Case Study



Case Study



Alternative 1: No action
Alternative 2: Multilayer cap
Alternative 3: Consolidation with simple dewatering
Alternative 4: Off-AOC consolidation cell

Case Study

NRC General Performance Objectives

- Annual dose must not exceed an equivalent of 25 mrem to the whole body, 75 mrem to the thyroid, and 25 mrem to any other organ
- Reasonable effort shall be made to maintain releases of radioactivity in effluents to ALARA
- Must ensure protection of any individual inadvertently intruding into the disposal site after active institutional controls site are removed

NRC Siting Requirements

- Capable of being characterized, modeled, analyzed and monitored
- Well drained and free of areas of flooding and frequent ponding
- Prohibits location in 100-year flood plain or wetland

NRC Siting Requirements (continued)

- Projected regional population growth and future developments are not likely to affect the ability of the disposal facility to meet the performance objectives
- Provide sufficient depth to the water table that groundwater intrusion, perennial or otherwise, into the waste will not occur
- Prohibits location where nearby activities or facilities could impact the site's ability to meet performance objectives or mask environmental monitoring

NRC Site Design Requirements

- Directed toward long-term isolation and avoidance of the need for continuing active maintenance
- Covers designed to minimize to the extent practicable water infiltration, to direct percolating or surface water away from the disposed waste
- Minimize to the extent practicable the contact standing water with waste during disposal, and the contact of percolating or standing water with wastes after disposal

NRC Monitoring Requirements

- Maintain post-operational surveillance
- Capable of providing early warning of releases of radionuclides from the disposal unit before they leave the site boundary

NRC Site Operation and Closure Requirements

- Maintains the package integrity during emplacement
- Minimizes the void spaces between packages
- Void spaces between waste packages must be filled to reduce future subsidence
- Locations of disposal unit must mapped by survey
- Only wastes contaminated with radioactive materials shall be disposed

NRC Institutional Controls

- Institutional controls may not be relied upon for more than 100 years following transfer of control of the disposal site to the owner

RCRA Design and Operating Requirements

- RCRA design and operating requirements for surface impoundments and landfills
 - Minimum technological requirements
 - Must have a two-liner system
 - Leachate collection/detection and removal system
 - Groundwater monitoring

RCRA Closure Requirements

- RCRA closure requirements for surface impoundments and landfills (waste in place)
 - Eliminate liquids by removal or solidification (surface impoundments only)
 - Stabilize remaining wastes (surface impoundments only)

RCRA Closure Requirements (continued)

- Final cover designed and constructed to:
 - ➡ Provide long-term minimization of migration of liquids
 - ➡ Function with minimum maintenance
 - ➡ Promote drainage and minimize erosion and abrasion to the cover
 - ➡ Accommodate settling and subsidence
 - ➡ Have a permeability less than or equal to the natural subsoils present

RCRA General Postclosure Requirements

- Groundwater monitoring and reporting requirements in accordance with the RCRA
- Maintenance and monitoring of waste containment systems (leaking detection/collection, final cover, groundwater monitoring system, stormwater run-on and run-off)

TSCA Chemical Waste Landfill Requirements

-
-
- Fence
Area
- Watercourses
- Groundwater monitoring

Actual Results of Case Study

- Selected alternative
- ARARs
- Classroom versus actual outcome